

AMENDMENTS TO THE CLAIMS

18. (previously added; previously and currently amended) A method of forming a socket for receiving a terminal pin from an electronic component therein, comprising [in order]:

- [(1)] forming a layer of a first material on an upper surface of a substrate; and
- [(2)] forming a layer of a second material on said [said] layer of said first material; [and]
- [(3)] forming an aperture in] wherein said first and second layers comprise an aperture to expose said upper surface of said substrate[;], and
wherein said first material has a positive coefficient of thermal expansion and said second material has a negative coefficient of thermal expansion.

19. (previously added; previously and currently amended) The method in accordance with claim 18, [further comprising, prior to step (1) of forming a layer of a first material:

forming an electrical contact pad on said substrate such that said contact pad is at least partially exposed within said aperture].

wherein said aperture exposes at least a portion of an electrical contact pad on said upper surface of said substrate.

20. (~~withdrawn~~; previously added; currently amended) [A] The method in accordance with claim 18, wherein said first material is a material selected from the group [:] consisting of silicon oxide, silicon dioxide, silicon nitride, and Si₃N₄.

21. (previously added; previously amended) The method in accordance with claim 18, wherein said first material is a polyimide.

22. (previously added; previously amended) The method in accordance with claim 18, wherein said second material is zirconium tungstate.

23. (previously added; previously amended) The method in accordance with claim 22, wherein said zirconium tungstate is single-crystal zirconium tungstate.

24. (**withdrawn**; previously added; currently amended) [A] The method in accordance with claim 22, wherein said zirconium tungstate is amorphous zirconium tungstate.

25. (**withdrawn**; previously added; currently amended) [A] The method in accordance with claim 22, wherein said zirconium tungstate is polymer bound zirconium tungstate.

26. (previously added; previously and currently amended) The method in accordance with claim 18, [further comprising, between step (1) of forming a layer of a first material and step (2) of forming a layer of a second material:]

[applying] wherein an interfacial material intervenes between said layer of first material and said layer of second material to permit relative movement between said layer of first material and said layer of second material.

27. (previously added; previously amended) The method in accordance with claim 18, wherein said substrate is ceramic.

28. (**withdrawn**; previously added; currently amended) [A] The method in accordance with claim 18, wherein said substrate is a package of an integrated circuit.

29. (previously added; previously and currently amended) The method in accordance with claim 18, wherein said layer of first material is [bonded to said substrate] formed using a spin-on process followed by a [and] photo [define/etch] -define and -etch process.

30. (previously added; previously and currently amended) The method in accordance with claim 18, wherein [said step (3) of] forming said aperture comprises forming a first aperture in said layer of first material and a second aperture in said layer of second material, wherein said second aperture has a linear dimension smaller than said first aperture.

31. (previously added; previously and currently amended) A method of electrically connecting an electronic component having a contact pin extending therefrom to a contact pad on a substrate, comprising[, in order]:

[(1)] forming a layer of a first material on an upper surface of said substrate;

[(2)] forming a layer of a second material on said [said] layer of said first material[; and],

[(3)] forming an aperture in] wherein said first and second layers comprise an aperture to expose said upper surface of said substrate[;], and

wherein said first material has a positive coefficient of thermal expansion and said second material has a negative coefficient of thermal expansion[;],

and wherein said method further comprises[, in order, subsequent to step (3) of forming an aperture in said first and second layers]:

[(4)] heating said previously formed layer of first material and said previously formed layer of second material to a first temperature substantially above a range of normal operating temperatures for said electronic component;

[(5)] inserting said contact pin into said aperture while said previously formed layer of first material and said previously formed layer of second material are heated to the first temperature; and

[(6)] after inserting said contact pin into said aperture, cooling said layer of first material and said layer of second material to a second temperature within said range of normal operating temperatures for said electronic component, wherein the second temperature is lower than the first temperature.

32. (previously added; previously and currently amended) The method in accordance with claim 31, [further comprising, prior to step (1) of forming a layer of a first material:
forming an electrical contact pad on said substrate such that said contact pad
is at least partially exposed within said aperture.]
wherein said aperture exposes at least a portion of an electrical contact pad on
said upper surface of said substrate.
33. (**withdrawn;** previously added; currently amended) [A] The method in accordance with claim 31, wherein said first material is a material selected from the group [:] consisting of silicon oxide, silicon dioxide, silicon nitride, and Si_3N_4 .
34. (previously added; previously amended) The method in accordance with claim 31, wherein said first material is a polyimide.
35. (previously added; previously amended) The method in accordance with claim 31, wherein said second material is zirconium tungstate.
36. (previously added; previously amended) The method in accordance with claim 35, wherein said zirconium tungstate is single-crystal zirconium tungstate.
37. (**withdrawn;** previously added; currently amended) [A] The method in accordance with claim 35, wherein said zirconium tungstate is amorphous zirconium tungstate.
38. (**withdrawn;** previously added; currently amended) [A] The method in accordance with claim 35, wherein said zirconium tungstate is polymer bound zirconium tungstate.
39. (previously added; previously and currently amended) The method in accordance with claim 31, [further comprising, between step (1) of forming a layer of a first material and step (2) of forming a layer of a second material:]

[applying] wherein an interfacial material intervenes between said layer of first material and said layer of second material to permit relative movement between said layer of first material and said layer of second material.

40. (previously added; previously amended) The method in accordance with claim 31, wherein said substrate is ceramic.

41. (**withdrawn**; previously added; currently amended) [A] The method in accordance with claim 31, wherein said substrate is a package of an integrated circuit.

42. (previously added; previously and currently amended) The method in accordance with claim 31, wherein said layer of first material is [bonded to said substrate] formed using a spin-on process followed by a [and] photo [define/etch] -define and -etch process.

43. (previously added; previously and currently amended) The method in accordance with claim 31, wherein [said step (3) of] forming said aperture comprises forming a first aperture in said layer of first material and a second aperture in said layer of second material, wherein said second aperture has a linear dimension smaller than said first aperture.

44. (previously added; previously and currently amended) The method in accordance with claim 31, wherein said [step (4) of heating said layer of first material and said layer of second material comprises heating said layer of first material and said layer of second material to a] first temperature [of] is between approximately 200°C and 250°C.

45. (previously added; previously amended) The method in accordance with claim 44, wherein [a normal operating temperature for said electronic component] said second temperature is approximately 100°C.

46. (previously added; previously and currently amended) The method in accordance with claim 31, wherein [said step (6) of] cooling said layer of first material and said layer of second material comprises cooling said layer of first material at a rate slower than the rate at which said layer of second material is cooled.

47. (new) A method of forming a socket having at least one electrical contact, the socket for bringing at least one terminal pin of an electronic component into contact with an electrical contact, comprising:

forming a first material on a substrate, the first material comprising a first aperture for receiving the terminal pin, wherein the first aperture exposes an electrical contact associated with the substrate; and

forming a second material on the first material, the second material comprising a second aperture for receiving the terminal pin, wherein the second aperture is concentric with the first aperture;

wherein the first material has a positive coefficient of thermal expansion and the second material has a negative coefficient of thermal expansion.

48. (**withdrawn**; new) The method of claim 47, wherein the first material is selected from the group consisting of silicon oxide, silicon dioxide, silicon nitride, and Si_3N_4 .

49. (new) The method of claim 47, wherein the first material comprises a polyimide.

50. (new) The method of claim 47, wherein the second material comprises zirconium tungstate.

51. (new) The method of claim 50, wherein the zirconium tungstate comprises single-crystal zirconium tungstate.

51. (**withdrawn**; new) The method of claim 50, wherein the zirconium tungstate comprises amorphous zirconium tungstate.

52. **(withdrawn; new)** The method of claim 50, wherein the zirconium tungstate comprises polymer bound zirconium tungstate.
53. (new) The method of claim 47, wherein an interfacial material intervenes between the first and second materials to permit relative movement between the first and second materials.
54. (new) The method of claim 47, wherein the substrate comprises a ceramic.
55. **(withdrawn; new)** The method of claim 47, wherein the substrate comprises a package of an integrated circuit.
56. (new) A method of forming a socket having at least one electrical contact, the socket for bringing at least one terminal pin of an electronic component into contact with an electrical contact, comprising:
 forming a first material on a substrate; and
 forming a first aperture in the first material for receiving the terminal pin,
 wherein the first aperture exposes an electrical contact associated with the substrate,
 wherein the first material has a negative coefficient of thermal expansion.
57. (new) The method of claim 56, wherein the first material comprises zirconium tungstate.
58. (new) The method of claim 57, wherein the zirconium tungstate comprises single-crystal zirconium tungstate.
59. **(withdrawn; new)** The method of claim 57, wherein the zirconium tungstate comprises amorphous zirconium tungstate.

60. (**withdrawn**; new) The method of claim 57, wherein the zirconium tungstate comprises polymer bound zirconium tungstate.
61. (new) The method of claim 56, wherein the substrate comprises a ceramic.
62. (**withdrawn**; new) The method of claim 56, wherein the substrate comprises a package of an integrated circuit.
63. (new) The method of claim 56, further comprising a second material between the first material and the substrate, wherein the second material comprises an aperture with a location corresponding to the aperture formed in the first material to exposes the electrical contact, and wherein the second material has a positive coefficient of thermal expansion.
64. (**withdrawn**; new) The method of claim 63, wherein the second material is selected from the group consisting of silicon oxide, silicon dioxide, silicon nitride, and Si_3N_4 .
65. (new) The method of claim 63, wherein the second material comprises a polyimide.
66. (new) The method of claim 63, wherein an interfacial material intervenes between the first and second materials to permit relative movement between the first and second materials.
67. (new) A method of capturing at least one terminal pin of an electronic component within a socket having an electrical contact corresponding to each terminal pin, wherein the socket comprises an aperture corresponding to each terminal pin, comprising:
 elevating the temperature of the socket;
 positioning the at least one terminal pin within its corresponding aperture at the elevated temperature; and

cooling the socket from its elevated temperature to capture the terminal pin in contact with its corresponding electrical contact.

68. (new) The method of claim 67, wherein elevating the temperature comprises elevating the temperature to a temperature greater than an operational temperature of the electronic component.

69. (new) The method of claim 67, wherein elevating the temperature of the socket increases a diameter of the aperture.

70. (new) The method of claim 67, wherein capturing the terminal pin in contact with the corresponding electrical contact comprises reducing a diameter of the aperture during cooling the socket to capture the terminal pin.

71. (new) The method of claim 67, wherein cooling the socket further compresses the captured terminal pin into the electrical contact.

72. (new) The method of claim 67, wherein the aperture is at least partially formed in a layer of a material having a negative coefficient of thermal expansion.

73. (new) The method of claim 67, wherein the negative coefficient of thermal expansion comprises zirconium tungstate.

74. (new) The method of claim 72, wherein the aperture is additionally formed in a material having a positive coefficient of thermal expansion.

75. (new) The method of claim 74, wherein the material having a positive coefficient of thermal expansion is between the electrical contact and the material having a negative coefficient of thermal expansion.

76. (new) The method of claim 75, wherein an interfacial material intervenes between the first and second materials to permit relative movement between the first and second materials.

77. (new) The method of claim 67, wherein positioning the at least one terminal pin within its corresponding aperture at the elevated temperature requires zero insertion force.

78. (new) A method of capturing at least one terminal pin of an electronic component within a socket having an electrical contact corresponding to each terminal pin, wherein the socket comprises an aperture corresponding to each terminal pin, consisting of:

elevating the temperature of the socket;

positioning the at least one terminal pin within its corresponding aperture at the elevated temperature; and

cooling the socket from its elevated temperature to capture the terminal pin in contact with its corresponding electrical contact.

79. (new) The method of claim 78, wherein elevating the temperature comprises elevating the temperature to a temperature greater than an operational temperature of the electronic component.

80. (new) The method of claim 78, wherein elevating the temperature of the socket increases a diameter of the aperture.

81. (new) The method of claim 78, wherein capturing the terminal pin in contact with the corresponding electrical contact comprises reducing a diameter of the aperture during cooling the socket to capture the terminal pin.

82. (new) The method of claim 78, wherein cooling the socket further compresses the captured terminal pin into the electrical contact.

83. (new) The method of claim 78, wherein the aperture is at least partially formed in a layer of a material having a negative coefficient of thermal expansion.
84. (new) The method of claim 78, wherein the negative coefficient of thermal expansion comprises zirconium tungstate.
85. (new) The method of claim 83, wherein the aperture is additionally formed in a material having a positive coefficient of thermal expansion.
86. (new) The method of claim 85, wherein the material having a positive coefficient of thermal expansion is between the electrical contact and the material having a negative coefficient of thermal expansion.
87. (new) The method of claim 86, wherein an interfacial material intervenes between the first and second materials to permit relative movement between the first and second materials.
88. (new) The method of claim 78, wherein positioning the at least one terminal pin within its corresponding aperture at the elevated temperature requires zero insertion force.
89. (new) A method of capturing at least one terminal pin of an electronic component within a socket having an electrical contact corresponding to each terminal pin, wherein the socket comprises an aperture corresponding to each terminal pin, comprising:
 elevating the temperature of the socket to increase the diameter of the aperture;
 positioning the at least one terminal pin with zero force within its corresponding aperture at the elevated temperature; and
 cooling the socket from its elevated temperature to cause the diameter of the aperture to reduce, thereby capturing the terminal pin in contact with its corresponding electrical contact.

90. (new) The method of claim 89, wherein elevating the temperature comprises elevating the temperature to a temperature greater than an operational temperature of the electronic component.

91. (new) The method of claim 89, wherein cooling the socket further compresses the captured terminal pin into the electrical contact.

92. (new) The method of claim 89, wherein the aperture is at least partially formed in a layer of a material having a negative coefficient of thermal expansion.

93. (new) The method of claim 89, wherein the negative coefficient of thermal expansion comprises zirconium tungstate.

94. (new) The method of claim 92, wherein the aperture is additionally formed in a material having a positive coefficient of thermal expansion.

95. (new) The method of claim 94, wherein the material having a positive coefficient of thermal expansion is between the electrical contact and the material having a negative coefficient of thermal expansion.

96. (new) The method of claim 95, wherein an interfacial material intervenes between the first and second materials to permit relative movement between the first and second materials.